

REMARKS

The rejections under 35 U.S.C. § 102(b) of Claims 1-5, 7, and 10-20 as anticipated by U.S. 5,190,738 (Parent) or U.S. 5,283,542 (Ochiai et al) are respectfully traversed.

Independent Claim 1 is drawn to a flame synthesized aluminum nitride filler-powder comprising elements Al, O and N, or comprising elements Al and N, wherein the particle size of the powder is included within the range of 0.001 to 500  $\mu\text{m}$ , the mean particle size thereof is within the range of 1 to 100  $\mu\text{m}$ , the external shape of the particles is spherical with a ratio of long axis diameter to short axis diameter being about 1, and the surface roughness of the particles with a ratio of the square of perimeter to the projected area measured based on SEM photographs being about 1.

Independent Claim 20 is drawn to an aluminum nitride filler-powder, consisting of elements Al, O and N, or consisting of elements Al and N, wherein the particle size of the powder is from 0.001 to 500  $\mu\text{m}$ , the mean particle size thereof is from about 10 to 100  $\mu\text{m}$ , and the external shape of the particles is spherical.

Specifically, Applicants contend that they are the first to produce a flame-synthesized aluminum nitride filler-powder having a substantially spherical shape with a substantially smooth surface. Fig. 3 that was attached to the amendment filed May 26, 2005, the color original of which was submitted with the RCE, shows the substantially spherical shape of the claimed filler-powder, based on a digitalization of the 5  $\mu\text{m}$  SEM photograph of Fig. 2 that was filed with the application and described in the specification at page 14, lines 1-2.

The particulate spherical shape parameters measured from said Fig. 2 are shown in the next Table:

	Particulate Spherical Shape Parameter	
	Elongation Percentage	Roughness Percentage
Fig. 2 of Present Invention	1 (1.2)	1 (1.4)
Ideal Circle	1 (1.0)	1 (1.1)

Said Fig. 3 also shows the shape of the particle represented in Fig. 8 of U.S. 5,096,860 (Nadkarni) (already of record), and of a commercially available powder, each analogously obtained by digitalization. The difference in shapes between the particles of Nadkarni and the commercially available powder, on the one hand, and the presently-claimed powder, is manifest.

While Nadkarni was not relied on by the Examiner in a rejection, Applicants note that Nadkarni is an invention of the same Assignee as Parent, and as described in Parent at the paragraph bridging columns 1 and 2. However, Parent provides no data or photographic evidence to show the sphericity of his particle. The respective processes of Parent and Nadkarni appear to be substantially similar, the only difference being that Parent produces particles with an oxygen content lower than the oxygen content of Nadkarni's particles.

A Table of the particulate spherical shape parameters for the particles of Nadkarni, analogous to the above Table, appears below:

	Particulate Spherical Shape Parameter	
	Elongation Percentage	Roughness Percentage
<u>Nadkarni</u>	2 (1.6)	2 (1.8)
Ideal Circle	1 (1.0)	1 (1.1)

The above-referenced commercially available powder is a product of Toyo Aluminum Co., made by the same process as disclosed in Parent and Ochiai et al.

A Table of the particulate spherical shape parameters for the commercially available powder, analogous to the above Tables, appears below:

	Particulate Spherical Shape Parameter	
	Elongation Percentage	Roughness Percentage
Commercially available powder	2 (1.5)	2 (1.7)
Ideal Circle	1 (1.0)	1 (1.1)

In the particle technology field, elongation percentage of a particle outer shape is generally defined as the ratio of the long-axis diameter to the short-axis diameter of the

particle. The roughness percentage of a particle surface is the ratio of the square of the perimeter to the projected area of the particle. As discussed in the previous response, surface roughness can be measured directly from Fig. 2 of the specification by digitalization thereof, and thus is inherently described in the specification. See, for example, the website:

<http://people.uncw.edu/dockal/gly312/grains/grains.htm>.

A printout therefrom, titled Grain Morphology -- Roundness, Surface Features, and Sphericity of Grains, is **submitted herewith**.

Neither Parent's nor Ochiai et al's particles meet the shape or morphology of the presently-claimed filler-powder.

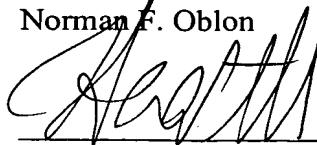
For all the above reasons, it is respectfully requested that the rejections over prior art be withdrawn.

The rejections of Claims 1-5, 7 and 10-19 under 35 U.S.C. § 112, first and second paragraphs, are respectfully traversed. Indeed, the rejections are now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that they be withdrawn.

All of the presently pending and active claims in this application are now believed to be in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected Claim 6, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

Respectfully submitted,

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